

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 6

PATENT NO. : 7,803,579
APPLICATION NO.: 10/532975
ISSUE DATE : September 28, 2010
INVENTOR(S) : Mitani et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Front page of patent, (56) References Cited; U.S. PATENT DOCUMENTS; the following should be added:

4,672,040	6/1987	Josephson
4,683,195	7/1987	Mullis et al.
4,683,202	7/1987	Mullis
4,800,159	1/1989	Mullis et al.
4,849,336	7/1989	Miyoshi et al.
5,512,439 A	4/1996	Hornes et al.
5,824,517 A	10/1998	Cleuziat et al.
6,046,807 A	4/2000	Chandler
6,057,107 A	5/2000	Fulton
6,063,603 A	5/2000	Davey et al.
6,117,635 A	9/2000	Nazarenko et al.
6,366,354 B1	4/2002	Chandler
6,420,539 B1	6/2002	Kramer et al.
6,617,106 B1	9/2003	Benner
2003/0073081 A1	4/2003	Mukai et al.
2003/0207292 A1	11/2003	Notomi et al.

Front page of patent, (56) References Cited; FOREIGN PATENT DOCUMENTS; the following should be added:

EP	0 320 308	A2	6/1989
EP	0 971 039	A2	1/2000
EP	1 041 160	A1	10/2000
EP	1 072 678	A1	1/2001
EP	1 327 679	A1	9/2001
EP	1 158 047	A1	11/2001
JP	59- 93099	A	5/1984
JP	59-148798	A	8/1984
JP	59-204200	A	11/1984

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JP	4-501959	A	4/1992
JP	7- 6986	A	1/1995
JP	7-114718	B2	12/1995
JP	9-504699	A	5/1997
JP	2650159	B2	5/1997
JP	10-257900	A	9/1998
JP	2710159	B2	10/1998
JP	2000-245460	A	9/2000
JP	2000-300265	A	10/2000
WO	95/12689	A1	5/1995
WO	95/25180	A1	9/1995
WO	99/06591	A1	2/1999
WO	99/09211	A1	2/1999
WO	99/10369	A1	3/1999
WO	99/54455	A1	10/1999
WO	00/28082	A1	5/2000
WO	00/63691	A2	10/2000
WO	01/34838	A1	5/2001

Front page of patent, (56) References Cited; OTHER PUBLICATIONS; the following should be added:

AU, et al. "Initiation of Methyl-directed Mismatch Repair." The Journal of Biological Chemistry, vol. 267(17) June 1992, pp 12142-12148

CLARK et al. "Functional Interaction of Proliferating Cell Nuclear Antigen with HSH2-MSH6 and MSH2-MSH3 Complexes." The Journal of Biological Chemistry, vol. 275(47), November 2000, pp. 36498-36501

DENG et al. "Site-Directed Mutagenesis of Virtually any plasmid by Eliminating a Unique Site." Analytical Biochemistry 200, 1992, pp. 81-88

(Continued)

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DIAZ et al. "PCR-Mediated Chemical Mutagenesis of Cloned Duplex DNAs." BioTechniques, vol. 11(2), 1991,
DOHET et al. "Large non-homology in heteroduplex DNA is processed differently than single base pair mismatches." Mol Gen Gent, 206, 1987, pp. 181-184
GOTOH et al. "Rapid method for detection of point mutations using mismatch binding protein (MutS) and an optical biosensor." Genetic Analysis: Biomolecular Engineering, 14, 1998, pp. 47-50
HABER et al. "Nucleotide Sequence of the Salmonella typhimurium mutS Gene Required for Mismatch Repair: Homology of MutS and HexA of Streptococcus pneumoniae." Journal of Bacteriology, vol. 170(1), January 1988, pp. 197-202
HORLACHER et al. "Recognition by viral and cellular DNA polymerases of nucleosides bearing bases with nonstandard hydrogen bonding patterns." Proc. Natl. Acad. Sci. USA, vol. 92, July 1995, pp. 6329-6333
JIRICNY et al., "Mismatch-containing oligonucleotide duplexes bound by the E.coli mutS-encoded protein." Nucleic Acids Research, vol. 16(16), 1988, pp. 7843-7853
JONES et al. "Repair of a Mismatch is Influenced by the Base composition of the Surrounding Nucleotide Sequence", Genetics, 115, April 1987, pp. 605-610
LAHUE et al. "DNA Mismatch Correction in a Defined System", Science, vol. 245, July 1989, pp. 160-164
LAHUE et al. "Methyl-directed DNA mismatch repair in Escherichia coli." Mutation Research, 198, 1988 pp. 37-43
LARRICK "Message Amplification Phenotyping (MAPPING) – principles, practice and potential." TIBTECH, vol 10, May 1992, pp. 146-152
LU et al. "Repair of Single Base-Pair Transversion Mismatches of Escherichia coli in Vitro: Correction of Certain A/G Mismatches Is Independent of dam Methylation and Hse mutHLS Gene Functions." Genetics, 118, April 1988, pp. 593-600
LUTZ et al. "Recognition of a Non-Standard Base Pair by Thermostable DNA Polymerases." Bioorganic & Medicinal Chemistry Letters 8, 1998, pp. 1149-1152
MODRICH "Methyl-directed DNA Mismatch Correction." The Journal of Biological Chemistry, vol. 264(12), 1989 pp. 6597-6600

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NAKAMAYE et al. "Inhibition of restriction endonuclease Nci I cleavage by phosphorothioate groups and its application to oligonucleotide-directed mutagenesis." Nucleic Acids Research, vol. 14(24), 1986, pp. 9679-9698
PANG et al. "Identification and Characterization of the mutL and mutS Gene Products of Salmonella typhimurium LT2." Journal of Bacteriology, vol. 163(3), September 1985, pp. 1007-1015
PRIEBE et al. "Nucleotide Sequence of the hexA Gene for DNA Mismatch Repair in Streptococcus pneumoniae and Homology of hexA to mutS of Escherichia coli and salmonella typhimurium." Journal of Bacteriology, vol. 170(1), January 1988, pp. 190-196
RADMAN et al. "The High Fidelity of DNA Duplication." Scientific American, August 1988, pp. 24-30
RADMAN et al. "Mismatch Repair in ESCHERICHIA COLI." Ann. Rev. Genet., 20, 1986, pp. 523-538
SAMBROOK et al. "Conditions for Hybridization of Oligonucleotide Probes", Molecular Cloning: A Laboratory Manual, 2nd edition, Cold Spring Harbor Laboratory Press, 1989, pp. 11.45-11.57
SISMOUR et al. "First PCR amplification of DNA containing a non-standard base pair", Biochemistry, vol. 42 (28), 2003, p. 8598
SMITH et al. "Mutation detection with MutH, MutL, and MutS mismatch repair proteins." Proc. Natl. Acad. Sci. USA, vol. 93, April 1996, pp. 4374-4379
SU et al. "Mispair Specificity of Methyl-directed DNA Mismatch Correction in Vitro", The Journal of Biological Chemistry, vol. 263(14), May 1988, pp. 6829-6835
FABRICE et al. "Une méthode d'amplification génique isotherme." C.R. Acad. Sci. Paris, Sciences de la vie 321, 1998, pp. 909-914.
SAMBROOK et al. "Conditions for Hybridization of Oligonucleotide Probes", Molecular Cloning: A Laboratory Manual, 2nd edition, Cold Spring Harbor Laboratory Press, 1989, pp. 8.2-8.17
LOWE et al. "A Computer Program for Selection of oligonucleotide primers for polymerase chain reactions." Nucleic Acids Research, vol. 18(7), 1990, pp. 1757-1761.
ROBERTSON et al. "An Introduction to PCR Primer Design and Optimization of Amplification Reactions." Forensic DNA Profiling Protocols; Methods in Molecular Biology, vol. 98, 1998, pp. 121-154.
HYNDMAN et al. "PCR Primer Design." PCR Protocols Part III, Methods in Molecular Biology, vol. 226, 2003, pp. 81-88.
(Continued)

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VAN PELT-VERKUIL et al. Principles and Technical Aspects of PCR Amplification; Chapter 5: PCR Primers." 2008, pp. 63-90.
PUSKÁS et al. "Reduction of mispriming in amplification reactions with restricted PCR." Genome Research, 5 (3), 1995, pp. 309-311.
HAFF "Improved quantitative PCR using nested primers." PCR Methods Appl., 3, 1994, pp. 332-337.
GOOKIN et al. "Single-Tube Nested PCR for Detection of *Tritrichomonas foetus* in Feline Feces. Journal of Clinical Microbiology, vol 40(11), 2002, pp. 4126-4130.
CHAN et al. "Single-tube nested PCR in the diagnosis of tuberculosis." Journal of Clinical Pathology, vol. 49(4), 1996, 290-294.
WOLFF et al. "Single-tube nested PCR with room-temperature-stable reagents." PCR Methods Appl, 4(6), 1995, pp. 376-379.
ENOSAWA et al. "Use of Loop-Mediated Isothermal Amplifications of the IS900 Sequence for Rapid Detection of Cultured *Mycobacterium avium* subsp. *paratuberculosis*." Journal of Clinical Microbiology, 41(9), September 2003, pp. 4359-4365.

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JP 3-313358 B2: "12/2002" should read -- 8/2002 --.

Front page of patent, (56) References Cited; OTHER PUBLICATIONS;
5th citation (Nagamine): "Accelerateed" should read -- Accelerated --.

Page 2 of patent, OTHER PUBLICATIONS; 1st citation (Nagamine): "Chamistry" should read -- Chemistry --.

Column 6, line 65, "Bacid" should read -- acid --.
Column 8, line 11, "acid The" should read -- acid. The --.
Column 9, line 46, "oligonucleotideprimers" should read -- oligonucleotide primers --.
Column 9, line 66, "→" should read -- > --.
Column 10, line 13, "9° Nm" should read -- 9°Nm --.
Column 11, line 9, "Bca(exo-)" should read -- Bca (exo-) --.
Column 12, line 54, "9° N" should read -- 9°N --.
Column 16, line 8, "can-be" should read -- can be --.
Column 21, line 10, "5-was" should read -- 5 was --.
Column 21, line 49, "sequenceplaced" should read -- sequence placed --.
Column 26, line 7, "diferent" should read -- different --.

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